SOP-14
Utility Clearance

Yerington Mine Site
Standard Operating Procedure

Revision 0
Revision Date: June 6, 2006

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1.0 OBJECTIVES

The objective of this standard operating procedure (SOP) is to describe procedures to reduce the risk of contact with buried or above ground utility service lines. Reducing this risk is extremely important for worker health and safety and company liability.

2.0 APPLICABILITY

This SOP applies to all field activities where there is possible contact with above ground utilities or sub-surface utilities. The definition and location of subsurface and overhead utilities presents a major hazard to field personnel working on site. This SOP should always be implemented completely, and should be supplemented (or superseded, if necessary) only if the added requirements do not prevent adequate evaluation of utilities.

RESPONSIBILITIES

The *Project Manager*, or designee, will have the responsibility to oversee full compliance of this SOP. The Field Supervisor shall implement and document that this SOP was implemented on site.

The *Site Health and Safety Officer* shall ensure full compliance with the SOP and report any deficiencies to the Health and Safety Manager and the PM.

The *field sampling personnel* will be responsible for understanding and implementing this SOP during all field activities, as well as, obtaining the appropriate field logbooks, field records, instruments, materials and calibration standards necessary to complete the field task.

3.0 DEFINITIONS

Kilovolt (kv) is one thousand volts

4.0 REQUIRED MATERIALS

The materials required for this SOP include the following:

- Bound field logbook;
- Black or blue water proof and/or indelible ink pens;
- Instruments designed for locating subsurface utilities (subcontractor supplied);
- Maps/figures/drawings showing the location of known utilities; and
- Replacement batteries and parts for instruments (if applicable).

Instruments used during field activities may include, but are not limited to, the following:

- Utility Line Locating Devices
- Electromagnetic Instruments
- Magnetometers
- Ground Penetrating Radar

5.0 METHODS

This SOP provides a description of methods that are applied to establishing and clearing locations for subsurface investigations by locating utilities. Most often, other parties with experience in locating subsurface utilities conduct this activity. However, site field personnel oversee such operations and clearly have a responsible role in understanding when the job has been completed. These other parties are discussed further below.

Buried and overhead utilities must be identified and located prior to beginning any invasive field work. A several fold process is used to accomplish a good understanding of utilities in an area. This process is intended to be iterative and overlapping, and is then supplemented later by additional safety precautions to prevent the hitting of utilities. The process includes a pre-work identification of utilities, a notification to local utilities, a technical investigation of potential utilities, followed by field truth testing. This process is discussed in more detail below.

At the beginning of a project, a review will be made of any available property maps, blue lines, or as-builts prior to site activities. This exercise often will result in an incomplete picture and should always be supplemented whenever possible with additional information. However, examining as-built maps, if available, always enhances an understanding of utility locations in the area of investigation.

During the project site walk, any discrepancies or new information regarding utility locations should be added to project maps. The site walk is a good time to review and confirm overhead utility lines.

After the above actions have occurred, the next action, and one that should always be taken even when on private land, is notification of potential subsurface activity to the local utility locator service (typically Underground Service Alert [USA]). The USA number for Nevada is:

Nevada USA: 1-800-227-2600

The Field Supervisor shall consult with USA at least 48 hours in advance of conducting subsurface field work. All drilling or subsurface locations should be clearly marked before calling USA. Suggested marking guidelines are included in Attachment B. USA will assign a "ticket" number to your site that will need to be recorded. This ticket number is valid for a limited time, but may be extended by contacting USA again. USA will notify utility representatives who will mark according to the utilities' color scheme. If possible, the field

supervisor or designee should meet with the utility personnel to make sure they understand where all utilities are located.

Because USA only clears directly around marked locations it is often necessary to take additional precautions to locate utility locations throughout the area. If necessary, utilities may be located using standard geophysical methods such as electromagnetic (EM), ground penetrating radar (GPR), magnetic gradient survey and/or a pipe locator. A geophysical Subcontractor typically conducts these operations.

Another source of information, especially for private land, is the landowner. Landowners usually know, in general, where utilities are buried on their property.

Utility locations will be marked using the following color code, unless the facility locator uses a different color code:

COLOR	IDENTIFICATION
White	Work location
Red	Electrical lines
Yellow	Gas or oil lines
Orange	Telephone lines
Blue	Water lines
Green	Sewer lines

In addition to the above-described utility locating methods, field truth testing will be conducted to avoid inadvertently hitting a utility. Field truth testing usually means small bore holes will be hand augured to approximately five feet for all locations within developed areas where there is a potential to impact buried utilities. The hole must be reamed by hand to at least the diameter of the drill rig auger or bit prior to drilling. For soil gas surveys, the survey probe shall be placed as close as possible to the hand auger.

Methods for utility clearance for horizontal and slant boring will be determined by the PM and Health and Safety Manager if and when these conditions apply.

Special requirements are needed at each location where trenching or excavating will occur using a backhoe or other heavy equipment. Prior to ground-breaking, the soil must be probed with a magnetometer and/or a pole made of non-conductive material. Once an excavation is open, all uncovered utilities must be supported. Any repairs or modifications to existing utility lines require the line to be locked-out/tagged-out prior to work.

Also important to operations that will occur in areas with utilities is clearance of overhead lines. Drill rig towers can be high enough to directly contact or provide inadvertent grounds for overhead lines. The following table gives the required minimum clearances for working proximity to overhead power lines.

Nominal Voltage	Minimum Clearance
0-50 KV	10 ft., or one mast length; whichever is greater
>50 KV	10 ft., plus an additional 4 inches for every 10 KV over 50 KV or 1.5 mast lengths; whichever is greater.

If it is necessary to work without the minimum clearance, the overhead line must be de-energized or rerouted by the utility company or a competent electrical contractor. Any work of this nature must be completed with adequate lock-out/tag-out procedures as outlined in a project health and safety plan.

Utility Clearance Form (Attachment A) must be completed and signed off by the Field Supervisor prior to commencement of relevant site work. This form signifies that the Field Supervisor has observed, or designated that someone observed that all utility location aspects as outlined in this SOP have been completed.

Any deviations from this SOP must be approved by the PM after collaboration with Health and Safety Manager. Approval via telephone is acceptable in the event the PM is not on site.

When repairing existing utilities, that have been damaged, refer to the Health and Safety Plan Lock-Out and Tag-Out Procedure.

6.0 QUALITY ASSURANCE/QUALITY CONTROL

Quality Assurance/Quality Control with utility location is conducted through a project with tiered overlapping aspects that provide double checks of previous parts.

- The *first tier* is researching potential utility locations through as-built drawings.
- The *second tier* is through contacting USA (if available in your area), and hiring geophysical subcontractors experienced in locating utilities.
- The *third tier* is to ground truth test through advancing bore holes.

7.0 CORRECTIVE ACTIONS

Even using the best preventative approach as described above can fail to locate a utility, or result in a utility being hit during field activities. As a result, corrective actions need to be planned in advance, because of the serious health and safety and legal and financial liabilities associated with an accident. Health and safety aspects and emergency procedures should be outlined in a project specific safety plan. Prior to beginning field work, emergency phone numbers for all utilities should be obtained in the event a line is hit. In most cases, this may be a single number such as USA. In addition, identify Subcontractors or personnel that can make immediate repair to a broken utility. Quickly mobilizing such companies to a site can prevent costly breaks in utility lines.

8.0 REFERENCES

OSHA 1926.650 - 1926.652 *Excavations*

OSHA 1926.955 *Provisions for Preventing Accident Due to Proximity to Overhead Lines*

OSHA 1910-333 *Selection and Use of Work Practices in Sub-part S – Electrical*

9.0 ATTACHMENTS

Attachment A: Example Utility Clearance Form

Attachment B: Suggested Marking Guidelines

ATTACHMENT A

EXAMPLE UTILITY CLEARANCE FORM

UTILITY CLEARANCE FORM

Project: _____ Completed by: _____

Location: _____ Date: _____

		Circle One		
1.	Review of Existing Maps	Yes	No	N/A
2.	Above ground utilities			
	a) marked on site maps	Yes	No	N/A
	b) necessary to lockout	Yes	No	N/A
	c) document procedures used to lock out or re-route	Yes	No	N/A
3.	Underground Utilities			
	a) State Agency called by: _____	Yes	No	N/A
	Date: _____ Ticket Number: _____			
	b) Geophysical clearance method(s) used	Yes	No	N/A
	By: _____ Date: _____			
	c) Utilities marked on site map (attached)	Yes	No	N/A
	By: _____ Date: _____			
4.	Hand augering completed to _____ feet	Yes	No	N/A
	By whom: _____ Date: _____			
5.	Trench/excavation probed	Yes	No	N/A

6. Approval:

_____ _____

Site Manager Date

_____ _____

Client Rep Date

7. Deviations from SOP Approval:

_____ _____

Project Manager Date

_____ _____

Health and Safety Manager Date

ATTACHMENT B

SUGGESTED MARKING GUIDELINES